

AMENDMENTS TO THE CLAIMS

1. **(Currently Amended)** An audio-signal-processing apparatus for processing input-audio-signals, each input-audio-signal comprising a musical sound that includes a fundamental-tone having a first frequency, and a harmonic-tone having a second frequency that is an integral multiple frequency of the first frequency, said apparatus comprising:

a band-decomposition ~~unit~~ unit, having a decomposition characteristic, operable to decompose a low frequency component of the input-audio-signals into a first frequency band and a second frequency band, the first frequency band and the second frequency band being different frequency bands, and the fundamental-tone being included in the first frequency band and the harmonic-tone being included in the second frequency band ~~a plurality of frequency components that have different frequency bands based on the decomposition characteristic;~~

a harmonic-series-generating unit operable to generate a harmonic-tone ~~component~~ component based on at least one of the plurality of frequency components for the fundamental-tone included in the first frequency band, and a harmonic-tone component for the harmonic-tone included in the second frequency band; and

a composition unit operable to compound the input-audio-signals, ~~and the harmonic-tone component for the fundamental-tone in the first frequency band, and the harmonic-tone component for the harmonic-tone included in the second frequency band~~ generated by said harmonic-series-generating unit,

wherein a bandwidth of the first frequency band and a bandwidth of the second frequency band are defined based on at least one of a lowest fundamental frequency of the musical sound and a low interval limit ~~said band-decomposition unit is operable to decompose the low frequency component of each of a fundamental tone and harmonic tones of the fundamental tone initially in a same band such that each belongs to a different frequency band.~~

2-4. **(Canceled)**

5. **(Currently Amended)** The audio-signal-processing apparatus of claim 1, wherein the bandwidth of the first frequency band and the bandwidth of the second frequency band ~~a band~~

~~width of each of the different frequency bands is~~ are from 15Hz to 50Hz.

6. **(Currently Amended)** The audio-signal-processing apparatus of claim 1, wherein the bandwidth of the first frequency band and the bandwidth of the second frequency band ~~a band width of each of the different frequency bands is~~ are from 15Hz to 30Hz.

7. **(Previously Presented)** The audio-signal-processing apparatus of claim 1, wherein said band-decomposition unit comprises a low-pass filter operable to extract frequency components in a lowest register.

8. **(Previously Presented)** The audio-signal-processing apparatus of claim 1, wherein said band-decomposition unit comprises a band-pass filter having a low cut-off frequency that is lower than a lowest fundamental frequency of a musical instrument.

9. **(Currently Amended)** The audio-signal-processing apparatus of claim 1, further comprising a delay device operable to compensate for a processing delay between the harmonic-tone component for the fundamental-tone included in the first frequency band and the harmonic-tone component for the harmonic-tone included in the second frequency band, and the input-audio-signals.

10. **(Currently Amended)** The audio-signal-processing apparatus of claim 1, further comprising a gain control device operable to adjust a gain of the input-audio-signals and a gain of the harmonic-tone component for the fundamental-tone included in the first frequency band and the harmonic-tone component for the harmonic-tone included in the second frequency band generated by said harmonic-series-generating unit.

11. **(Currently Amended)** An audio-signal-processing apparatus for processing input-audio-signals, each input-audio-signal comprising a musical sound that includes a fundamental-

tone having a first frequency, and a harmonic-tone having a second frequency that is an integral multiple frequency of the first frequency, said apparatus comprising:

a sum component output unit operable to receive input-audio-signals of a first channel and input-audio-signals of a second channel and output a sum component of the input-audio-signals of the first channel and the input-audio-signals of the second channel;

~~a band-decomposition unit unit, having a decomposition characteristic, operable to decompose the sum component into~~ a low frequency component of the input-audio-signals into a first frequency band and a second frequency band, the first frequency band and the second frequency band being different frequency bands, and the fundamental-tone being included in the first frequency band and the harmonic-tone being included in the second frequency band ~~a plurality of frequency components that have different frequency bands based on the decomposition characteristic;~~

a harmonic-series-generating unit operable to generate a harmonic-tone component ~~component based on at least one of the plurality of frequency components~~ for the fundamental-tone included in the first frequency band, and a harmonic-tone component for the harmonic-tone included in the second frequency band;

a first composition unit operable to compound the input-audio-signals of the first channel, ~~and the harmonic-tone component~~ for the fundamental-tone included in the first frequency band, and the harmonic-tone component for the harmonic-tone included in the second frequency band generated by said harmonic-series-generating unit; and

a second composition unit operable to compound the input-audio-signals of the second channel, ~~and the harmonic-tone component~~ for the fundamental-tone included in the first frequency band, and the harmonic-tone component for the harmonic-tone included in the second frequency band generated by said harmonic-series-generating unit,

wherein a bandwidth of the first frequency band and a bandwidth of second frequency band are defined based on at least one of a lowest fundamental frequency of the musical sound and a low interval limit ~~said band-decomposition unit is operable to decompose the low frequency component of each of a fundamental tone and harmonic tones of the fundamental tone initially in a same band such that each belongs to a different frequency band.~~

12. **(Currently Amended)** An audio-signal-processing method for processing input-audio-signals, each input-audio-signal comprising a musical sound that includes a fundamental-tone with a first frequency, and a harmonic-tone with a second frequency that is an integral multiple frequency of the first frequency, said method comprising:

decomposing a low frequency component of the input-audio-signals into a first frequency band and a second frequency band, the first frequency band and the second frequency band being different frequency bands, and the fundamental-tone being included in the first frequency band and the harmonic-tone being included in the second frequency band ~~a plurality of frequency components that have different frequency bands based on a decomposition characteristic;~~

generating a harmonic-tone component for the fundamental-tone included in the first frequency band, and a harmonic-tone component for the harmonic-tone included in the second frequency band ~~based on at least one of the plurality of frequency components; and~~

compounding the input-audio-signals, ~~and the generated harmonic-tone component~~ for the fundamental-tone included in the first frequency band, and the generated harmonic-tone component for the harmonic-tone included in the second frequency band,

wherein a bandwidth of the first frequency band and a bandwidth of the second frequency band are defined based on at least one of a lowest fundamental frequency of the musical sound and a low interval limit ~~said decomposing comprises decomposing the low frequency component of each of a fundamental tone and harmonic tones of the fundamental tone initially in a same band such that each belongs to a different frequency band.~~

13-15. **(Canceled)**

16. **(Currently Amended)** The audio-signal-processing method of claim 12, wherein a ~~band width~~ the bandwidth of each of the first frequency band and the bandwidth of the second frequency band ~~different frequency bands is~~ are from 15Hz to 30Hz.

17. **(Currently Amended)** The audio-signal-processing method of claim 12, wherein

said decomposing further comprises decomposing the low frequency component of the input-audio-signals into ~~the plurality of frequency components that have the different frequency bands~~ based on ~~the a~~ decomposition characteristic ~~with of~~ a low-pass filter operable to extract frequency components in a lowest register.

18. **(Currently Amended)** The audio-signal-processing method of claim 12, wherein a ~~band width of each of the~~ bandwidth of the first frequency band and the bandwidth of the second frequency band ~~different frequency bands is~~ are from 15Hz to 50Hz.

19. **(Currently Amended)** The audio-signal-processing method of claim 12, further comprising compensating for a processing delay between the generated harmonic-tone component for the fundamental-tone included in the first frequency band and the harmonic-tone component for the harmonic-tone included in the second frequency band, and the input-audio-signals.

20. **(Currently Amended)** The audio-signal-processing method of claim 12, further comprising adjusting a gain of the input-audio-signals and a gain of the generated harmonic-tone component for the fundamental-tone included in the first frequency band and the harmonic-tone component for the harmonic-tone included in the second frequency band.